What is Claimed is:

1. A method of multiplexing a plurality of signals to form a constant-envelope composite signal, comprising:

(a) generating a composite signal based on a weighted majority vote of the plurality of signals; and

(b) modulating a carrier signal with the composite signal to form the constant-envelope composite signal.

2. The method of claim 1, wherein (a) includes:

(a1) weighting values of the plurality of signals to form weighted signal values;

(a2) summing the weighted signal values to form a weighted sum; and

(a3) setting a value of the composite signal in accordance with an arithmetic sign of the weighted sum.

3. The method of claim 2, wherein the values of the plurality of signals are weighted in accordance with a power allocation associated with the plurality of signals.

4. The method of claim 3, wherein the values of the plurality of signals are weighted as a function of expected cross-correlation values between the plurality of signals and the composite signal formed from the weighted sum of the plurality of signals.

5. The method of claim 4, wherein the values of the plurality of signals are weighted such that respective powers of the plurality of signals are substantially proportional to the square of the expected cross-correlation values.

6. The method of claim 3, wherein weighting coefficients used to weight the values of the plurality of signals are determined each time the power allocation changes.

7. The method of claim 1, wherein (a) includes:

(a1) classifying each of the plurality of signals into one of a first group and a second group based on a power allocation associated with the plurality of signals;

(a2) determining weighting coefficients of signals in the first group; and

(a3) determining weighting coefficients of signals in the second group in a manner different from the first group.

8. The method of claim 7, wherein weighting coefficients of signals in the first group are determined in accordance with a square root function of the power allocation.

9. The method of claim 7, wherein weighting coefficients of signals in the second group are determined as a function of expected cross-correlation values between the signals in the second group and the composite signal.

10. The method of claim 1, wherein the weighted majority vote is based upon a stationary weighted majority voting rule.

11. The method of claim 1, wherein the weighted majority vote is based upon a cyclostationary weighted majority voting rule.

12. The method of claim 11, wherein the composite signal comprises interleaved values of individual signals interlaced with values of majority voted signals.

13. The method of claim 1, wherein the plurality of signals are Code Division Multiple Access (CDMA) data streams.

14. The method of claim 1, wherein the plurality of signals comprises chip-synchronous, pseudo-noise signal codes, and wherein values of the composite signal are determined on a chip-by-chip basis from weighted majority voting of the plurality of signals.

15. The method of claim 1, wherein a multiplexing loss resulting from multiplexing the plurality of signals is substantially the same for each of the plurality of signals.

16. The method of claim 1, wherein the values of the plurality of signals are weighted in accordance with an associated power allocation such that, when each of the plurality of signals is allocated an equal power, the values of the plurality of signals are equally weighted.

17. An apparatus for multiplexing a plurality of signals to form a constant-envelope composite signal, comprising:

a majority logic unit receiving the plurality of signals and generating a composite signal based on a weighted majority vote of the plurality of signals; and

a modulator configured to modulate a carrier signal with the composite signal to form the constant-envelope composite signal.

18. The apparatus of claim 17, wherein the apparatus is a base station in a communication network.

19. The apparatus of claim 18, wherein the base station is in a terrestrial cellular network.

20. The apparatus of claim 17, wherein the apparatus is a mobile communication device.

21. The apparatus of claim 17, wherein the apparatus is a satellite.

22. The apparatus of claim 21, wherein the satellite is a global positioning system satellite.

23. The apparatus of claim 17, wherein said majority logic unit weights values of the plurality of signals to form weighted signal values, sums the weighted signal values to form a weighted sum, and sets a value of the composite signal in accordance with an arithmetic sign of the weighted sum.

24. The apparatus of claim 23, wherein said majority logic unit weights the values of the plurality of signals in accordance with a power allocation associated with the plurality of signals.

25. The apparatus of claim 24, wherein said majority logic unit weights the values of the plurality of signals as a function of expected cross-correlation values between the

plurality of signals and the composite signal formed from the weighted sum of the plurality of signals.

26. The apparatus of claim 25, wherein said majority logic unit weights the values of the plurality of signals such that respective powers of the plurality of signals are substantially proportional to the square of the expected cross-correlation values.

27. The apparatus of claim 24, wherein said majority logic unit determines weighting coefficients used to weight the values of the plurality of signals each time the power allocation changes.

28. The apparatus of claim 17, wherein said majority logic unit classifies each of the plurality of signals into one of a first group and a second group based on a power allocation associated with the plurality of signals, determines weighting coefficients of signals in the first group; and determines weighting coefficients of signals in the second group in a manner different from the first group.

29. The apparatus of claim 28, wherein said majority logic unit determines weighting coefficients of signals in the first group in accordance with a square root function of the power allocation.

30. The apparatus of claim 28, wherein said majority logic unit determines weighting coefficients of signals in the second group as a function of expected cross-correlation values between the signals in the second group and the composite signal.

31. The apparatus of claim 17, wherein the weighted majority vote is based upon a stationary weighted majority voting rule.

32. The apparatus of claim 17, wherein the weighted majority vote is based upon a cyclostationary weighted majority voting rule.

33. The apparatus of claim 32, wherein the composite signal comprises interleaved values of individual signals interlaced with values of majority voted signals.

34. The apparatus of claim 17, wherein the plurality of signals are Code Division Multiple Access (CDMA) data streams.

35. The apparatus of claim 17, wherein the plurality of signals comprises chip-synchronous, pseudo-noise signal codes, and wherein said majority logic unit determines values of the composite signal on a chip-by-chip basis from weighted majority voting of the plurality of signals.

36. The apparatus of claim 17, wherein a multiplexing loss resulting from multiplexing the plurality of signals is substantially the same for each of the plurality of signals.

37. The apparatus of claim 17, wherein said majority logic unit weights the values of the plurality of signals in accordance with an associated power allocation such that, when each of the plurality of signals is allocated an equal power, said majority logic unit equally weights the values of the plurality of signals.

38. An apparatus for multiplexing a plurality of signals to form a constant-envelope composite signal, comprising:

means for generating a composite signal based on a weighted majority vote of the plurality of signals; and

means for modulating a carrier signal with the composite signal to form the constant-envelope composite signal.

39. The apparatus of claim 38, wherein the apparatus is a base station in a communication network.

40. The apparatus of claim 39, wherein the base station is in a terrestrial cellular network.

41. The apparatus of claim 38, wherein the apparatus is a mobile communication device.

42. The apparatus of claim 38, wherein the apparatus is a satellite.

43. The apparatus of claim 42, wherein the satellite is a global positioning system satellite.

44. The apparatus of claim 38, wherein said means for generating includes:

means for weighting values of the plurality of signals to form weighted signal values;

means for summing the weighted signal values to form a weighted sum; and

means for setting a value of the composite signal in accordance with an arithmetic sign of the weighted sum.

45. The apparatus of claim 44, wherein said means for weighting weights the values of the plurality of signals in accordance with a power allocation associated with the plurality of signals.

46. The apparatus of claim 45, wherein said means for weighting weights the values of the plurality of signals as a function of expected cross-correlation values between the plurality of signals and the composite signal formed from the weighted sum of the plurality of signals.

47. The apparatus of claim 46, wherein said means for weighting weights the values of the plurality of signals such that respective powers of the plurality of signals are substantially proportional to the square of the expected cross-correlation values.

48. The apparatus of claim 45, wherein said means for weighting determines weighting coefficients used to weight the values of the plurality of signals each time the power allocation changes.

49. The apparatus of claim 38, wherein said means for generating classifies each of the plurality of signals into one of a first group and a second group based on a power allocation associated with the plurality of signals, determines weighting coefficients of

signals in the first group; and determines weighting coefficients of signals in the second group in a manner different from the first group.

50. The apparatus of claim 49, wherein said means for generating determines weighting coefficients of signals in the first group in accordance with a square root function of the power allocation.

51. The apparatus of claim 49, wherein said means for generating determines weighting coefficients of signals in the second group as a function of expected cross-correlation values between the signals in the second group and the composite signal.

52. The apparatus of claim 38, wherein the weighted majority vote is based upon a stationary weighted majority voting rule.

53. The apparatus of claim 38, wherein the weighted majority vote is based upon a cyclostationary weighted majority voting rule.

54. The apparatus of claim 53, wherein the composite signal comprises interleaved values of individual signals interlaced with values of majority voted signals.

55. The apparatus of claim 38, wherein the plurality of signals are Code Division Multiple Access (CDMA) data streams.

56. The apparatus of claim 38, wherein the plurality of signals comprises chip-synchronous, pseudo-noise signal codes, and wherein said means for generating determines values of the composite signal on a chip-by-chip basis from weighted majority voting of the plurality of signals.

57. The apparatus of claim 38, wherein a multiplexing loss resulting from multiplexing the plurality of signals is substantially the same for each of the plurality of signals.

58. The apparatus of claim 38, wherein said means for generating weights the values of the plurality of signals in accordance with an associated power allocation such that, when each of the plurality of signals is allocated an equal power, said means for generating equally weights the values of the plurality of signals.